

WHAT IS CLAIMED IS:

- 1 1. A contact for a vacuum interrupter, comprising:
 - 2 1) a contact plate; and
 - 3 2) a contact carrier comprising:
 - 4 a first end face which is fitted with the contact plate, and
 - 5 a peripheral face which is formed with a slit portion in such a
 - 6 manner as to form a coil part, the coil part flowing a current such that a longitudinal
 - 7 magnetic field is formed in an axial direction of the contact carrier, the first end face
 - 8 fitted with the contact plate being formed with a circumferential slit portion which
 - 9 connects to the slit portion.

- 1 2. The contact for the vacuum interrupter as claimed in claim 1, wherein the
 - 2 contact plate is formed with a slit which connects to the circumferential slit portion.

- 1 3. The contact for the vacuum interrupter as claimed in claim 1, wherein
 - 2 when the contact carrier defines an outer diameter D in a following range:
 - 3 $60 \text{ mm} \leq D \leq 200 \text{ mm};$
 - 4 the contact carrier defines a length L in a following range:
 - 5 $0.1D \text{ mm} \leq L \leq 0.5D \text{ mm},$
 - 6 the slit portion formed in the peripheral face of the contact carrier is defined in
 - 7 number S1 as follows:
 - 8 $0.03D / \text{mm} \leq S1 \leq 0.1D / \text{mm},$
 - 9 relative to an axis of the contact carrier, the slit portion formed in the
 - 10 peripheral face of the contact carrier defines an inclination angle α expressed as
 - 11 below:
 - 12 $60^\circ \leq \alpha \leq 80^\circ,$
 - 13 the slit portion formed in the peripheral face of the contact carrier defines an
 - 14 azimuth angle β expressed as below:
 - 15 $45^\circ \leq \beta \leq 120^\circ,$ and
 - 16 the circumferential slit portion formed in the first end face of the contact
 - 17 carrier defines an azimuth angle γ expressed as below:
 - 18 $(30/S1)^\circ \leq \gamma \leq (270/S1)^\circ.$

1 4. The contact for the vacuum interrupter as claimed in claim 3, wherein the
2 contact carrier has a wall thickness W in a following range:

3 $6 \text{ mm} \leq W \leq 12 \text{ mm}.$

1 5. The contact for the vacuum interrupter as claimed in claim 2, wherein
2 the slit formed in the contact plate is substantially linear and extends radially
3 from a center of the contact plate, and

4 the slit formed in the contact plate connects to a section connecting the
5 circumferential slit portion and the slit portion which is formed in the peripheral face
6 of the contact carrier.

1 6. The contact for the vacuum interrupter as claimed in claim 2, wherein
2 the slit formed in the contact plate is substantially linear and extends radially
3 from a center of the contact plate, and

4 the slit formed in the contact plate connects to an initial end of the
5 circumferential slit portion.

1 7. The contact for the vacuum interrupter as claimed in claim 2, wherein
2 the slit formed in the contact plate is substantially linear, and extends in such a
3 manner as to be offset from a line passing through a center of the contact plate,
4 the slit formed in the contact plate extends in parallel with the line through the center
5 of the contact plate by a predetermined distance, and

6 the slit formed in the contact plate connects to an initial end of the
7 circumferential slit portion.

1 8. The contact for the vacuum interrupter as claimed in claim 1, wherein
2 the contact carrier further comprises a second end face opposite to the first end
3 face, and

4 the second end face of the contact carrier is joined with a contact end plate.

1 9. The contact for the vacuum interrupter as claimed in claim 1, wherein
2 the contact carrier is monolithic with a contact end plate.

1 10. The vacuum interrupter as claimed in claim 1, wherein a pair of the contacts
2 are disposed in such a manner as to oppose each other substantially coaxially, the
3 opposing contacts defining a predetermined gap G therebetween in a following
4 range:

5
$$15 \text{ mm} \leq G \leq 100 \text{ mm}.$$

1 11. A vacuum interrupter, comprising:

2 a first contact fixed to a peak end of a stationary rod which is fixed to a first
3 end plate of a vacuum container; and

4 a second contact fixed to a peak end of a movable rod which is fixed to a
5 second end plate of the vacuum container opposite to the first end plate, the second
6 contact opposing the first contact substantially coaxially in such a manner as to
7 define a predetermined gap G therebetween in a following range:

8
$$15 \text{ mm} \leq G \leq 100 \text{ mm},$$

9 each of the first contact and the second contact, comprising:

10 1) a contact plate; and

11 2) a contact carrier comprising:

12 a first end face which is fitted with the contact plate, and

13 a peripheral face which is formed with a slit portion in such a
14 manner as to form a coil part, the coil part flowing a current such that a longitudinal
15 magnetic field is formed in an axial direction of the contact carrier, the first end face
16 fitted with the contact plate being formed with a circumferential slit portion which
17 connects to the slit portion.

1 12. The vacuum interrupter as claimed in claim 11, wherein the contact plate is
2 formed with a slit which connects to the circumferential slit portion.

1 13. The vacuum interrupter as claimed in claim 11, wherein

2 when the contact carrier defines an outer diameter D in a following range:

3
$$60 \text{ mm} \leq D \leq 200 \text{ mm};$$

4 the contact carrier defines a length L in a following range:

5
$$0.1D \text{ mm} \leq L \leq 0.5D \text{ mm},$$

6 the slit portion formed in the peripheral face of the contact carrier is defined in
7 number S1 as follows:

$$8 \quad 0.03D / \text{mm} \leq S1 \leq 0.1D / \text{mm},$$

9 relative to an axis of the contact carrier, the slit portion formed in the
10 peripheral face of the contact carrier defines an inclination angle α expressed as
11 below:

$$12 \quad 60^\circ \leq \alpha \leq 80^\circ,$$

13 the slit portion formed in the peripheral face of the contact carrier defines an
14 azimuth angle β expressed as below:

$$15 \quad 45^\circ \leq \beta \leq 120^\circ, \text{ and}$$

16 the circumferential slit portion formed in the first end face of the contact
17 carrier defines an azimuth angle γ expressed as below:

$$18 \quad (30/S1)^\circ \leq \gamma \leq (270/S1)^\circ.$$

1 14. The vacuum interrupter as claimed in claim 13, wherein the contact carrier has
2 a wall thickness W in a following range:

$$3 \quad 6 \text{ mm} \leq W \leq 12 \text{ mm}.$$

1 15. A contact for a vacuum interrupter, comprising:

- 2 1) a plate;
- 3 2) a carrier having a first end face mounted to the plate; and
- 4 3) slits formed in the carrier, the slits defining a coil portion in the carrier, a
5 current passing through the coil portion generating a longitudinal magnetic field
6 along an axial direction of the carrier,

7 the slits comprising a first slit which comprises:

8 a circumferential slit portion formed in the first end face of the
9 carrier, and

10 an inclined slit portion formed in a peripheral face of the carrier at
11 a predetermined inclination angle α with respect to an axis of the carrier and
12 connected to an end of the circumferential slit portion.

1 16. The contact as claimed in claim 15, wherein the slits further comprises a
2 second slit formed in the peripheral face of the carrier at the predetermined

3 inclination angle α and extending from an axially middle position of the carrier.

1 17. The contact as claimed in claim 16, wherein the second slit has an opening in a
2 second end face of the carrier.

1 18. The contact as claimed in claim 16, wherein when an outer diameter D of the
2 carrier is $60 \text{ mm} \leq D \leq 200 \text{ mm}$,
3 a length L of the carrier is given by $0.2D \text{ mm} \leq L \leq D \text{ mm}$,
4 a total number S2 of the first slits and the second slits is given by $0.1D / \text{mm} \leq$
5 $S2 \leq 0.2D / \text{mm}$,
6 the inclination angle α is given by $60^\circ \leq \alpha \leq 80^\circ$,
7 an azimuth angle β of the inclined slit portion of the first slit, and the second
8 slit is given by $(540/S2)^\circ \leq \beta \leq (600/S2)^\circ$,
9 an azimuth angle δ between the inclined slit portion of the first slit, and the
10 second slit is given by $(120/S2)^\circ \leq \delta \leq (600/S2)^\circ$, and
11 an azimuth angle γ of the circumferential slit portion of the first slit is given by
12 $(120/S2)^\circ \leq \gamma \leq (600/S2)^\circ$.

1 19. The contact as claimed in claim 18, wherein a wall thickness W of the carrier is
2 $6 \text{ mm} \leq W \leq 12 \text{ mm}$.

1 20. The contact as claimed in claim 16, wherein the second slit comprises a
2 circumferential slit portion formed in a second end face of the carrier.

1 21. A vacuum interrupter, comprising:

2 two contacts disposed coaxially to oppose each other, a predetermined gap G
3 between the two contacts being given by $15 \text{ mm} \leq G \leq 100 \text{ mm}$, each of the two
4 contacts comprising:

5 1) a plate;

6 2) a carrier having a first end face mounted to the plate; and

7 3) slits formed in the carrier, the slits defining a coil portion in the carrier, a
8 current passing through the coil portion generating a longitudinal magnetic field
9 along an axial direction of the carrier,

10 the slits comprising a first slit which comprises:
 11 a circumferential slit portion formed in the first end face of the
 12 carrier, and
 13 an inclined slit portion formed in a peripheral face of the carrier at
 14 a predetermined inclination angle α with respect to an axis of the carrier and
 15 connected to an end of the circumferential slit portion.

1 22. The vacuum interrupter as claimed in claim 21, wherein the slits further
 2 comprises a second slit formed in the peripheral face of the carrier at the
 3 predetermined inclination angle α and extending from an axially middle position of
 4 the carrier.

1 23. The vacuum interrupter as claimed in claim 22, wherein the second slit has an
 2 opening in the second end face of the carrier.

1 24. The vacuum interrupter as claimed in claim 22, wherein when an outer
 2 diameter D of the carrier is $60 \text{ mm} \leq D \leq 200 \text{ mm}$,
 3 a length L of the carrier is given by $0.2D \text{ mm} \leq L \leq D \text{ mm}$,
 4 a total number S2 of the first slits and the second slits is given by $0.1D / \text{mm} \leq$
 5 $S2 \leq 0.2D / \text{mm}$,
 6 the inclination angle α is given by $60^\circ \leq \alpha \leq 80^\circ$,
 7 an azimuth angle β of the inclined slit portion of the first slit and the second
 8 slit is given by $(540/S2)^\circ \leq \beta \leq (600/S2)^\circ$,
 9 an azimuth angle δ between the inclined slit portion of the first slit, and the
 10 second slit is given by $(120/S2)^\circ \leq \delta \leq (600/S2)^\circ$, and
 11 an azimuth angle γ of the circumferential slit portion of the first slit is given by
 12 $(120/S2)^\circ \leq \gamma \leq (600/S2)^\circ$.

1 25. The vacuum interrupter as claimed in claim 24, wherein a wall thickness W of
 2 the carrier is $6 \text{ mm} \leq W \leq 12 \text{ mm}$.

1 26. The vacuum interrupter as claimed in claim 22, wherein the second slit
 2 comprises a circumferential slit portion formed in a second end face of the carrier.

1 27. A contact for a vacuum interrupter, comprising:

2 1) a plate;

3 2) a carrier having a first end face mounted to the plate; and

4 3) means for forming slits in the carrier, the forming means defining a coil
5 portion in the carrier, a current passing through the coil portion generating a
6 longitudinal magnetic field along an axial direction of the carrier,

7 the forming means comprising a first slit which comprises:

8 a circumferential slit portion formed in the first end face of the
9 carrier, and

10 an inclined slit portion formed in a peripheral face of the carrier at
11 a predetermined inclination angle α with respect to an axis of the carrier and
12 connected to an end of the circumferential slit portion.

1 28. The vacuum interrupter as claimed in claim 27, wherein the slits further
2 comprises a second slit formed in the peripheral face of the carrier at the
3 predetermined inclination angle α and extending from an axially middle position of
4 the carrier.